News, Comment and Reviews

Review: Chris Brunsdon and Lex Comber, *An Introduction to R for Spatial Analysis and Mapping*, 2015 (SAGE) (with some notes on making 'the big switch')

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I have a difficult relationship with R. As a social science 'end-user', I have often struggled with language-driven software. When I first took up quantitative research during my PhD I adopted Stata, in part due to circumstance (my instructor at the time was a Stata-user, which made us Stata users), and in part due to its intuitive command structure and useful help libraries. Someone (i.e. me) with a decent knowledge of statistics, but with practical modelling and interpretation in mind, could easily navigate the help dialogs and worked examples, and quite quickly become proficient. But of course this came at a cost. My student license (approximately £150 if I remember), expired when I got my first job, which meant coughing up a hefty sum for full licensing privileges. I was fortunate enough to have a job where my employer met the costs as a work essential, but otherwise the expense is prohibitive. Which makes projects like R all the more crucial for public participation in science. The democratisation of software production through open-source is something very much to be welcomed. Wikipedia for example, has undercut a decades-old market in the encyclopaedia, whilst R appears slowly to be eroding the user base of proprietary software such as SPSS, Stata, and SAS. Ownership and production of the tools by those at the coalface is a process to be encouraged. I realised the full benefits of this on my way back from a recent demography conference. Having photographed a reference to an R package on a conference poster, I loaded the library and solved a time-series analysis issue which had been bothering me for (truthfully) months. Whilst packages such as Stata contain extensive libraries of user-written routines, cost must be borne in mind. These R packages cost nothing.

Yet therein lies the difficulty. The learning curve is steep, and the work-a-day user ends up giving greater time to the rudiments of coding, rather than the substance of their subject. The problem – particularly with spatial analysis – is that advances in the field now outpace their implementation in proprietary software, which inevitably cedes a degree of quality control to the proprietor. Yet keeping pace with current spatial modelling now requires greater engagement with open source. Geographers will doubtless be familiar with the freeware Q-Gis, which admirably performs many of the tasks of the Arc packages, with a decent interface and substantial documentation to match. Having migrated to the former, I approach Brunsdon and Comber with an analysis problem that had surpassed the capacities of proprietary GIS. There is no doubting the credentials of the authors – indeed, Brunsdon is one of the originators of Geographically Weighted Regression, a topic touched on in detail later in the book. As such, the book is designed to be read at the computer, working through the examples in real time. Its pedagogic style will be familiar to readers of books such as Andy Field's *Discovering Statistics* series, and I kept the book open on my bookstand, with two R windows – one for the extensive worked examples contained in the book, the other to replicate the procedures on my own data.

The opening chapters offer a gradual learning curve, walking you through installation, loading of libraries, and some basic data summary, manipulation, and graphing. I came to R with no knowledge of programming, aside from some basic Stata procedures (if implementing basic loop functions qualifies as programming). Good workflow is encouraged, the full import of which becomes apparent with the progressively growing complexity of the book – specifying file paths to a common directory, and working with a script editor to save your command processes. This alone is a boon to R users, and indeed other command-based programmes. Replicability, file sharing, and collaboration are greatly simplified once dialogs are removed. Working through the introductory chapters, I felt comfortable with the R interface for the first time. Perhaps not proficient (no fault of the authors), but the gently-encouraging style of writing, and the use of real-world data lends a sense of achievement to the learning process. Flitting between my own data whilst working through the book, I was soon able to load and summarise files previously held in Arc.

Those who have dipped into R already will be aware of its extensive online community. The book's companion website provides the R code snippets used within, a welcome addition, as code lines become lengthy quite quickly. The chapters also contain embedded exercises rather than typical end-of-chapter self-assessments, which are welcome as they allow you to experiment on the fly, whilst in the middle of relevant sections. The book is logically and usefully divided into sections, with introductory chapters 2-5 covering basic data plots and summaries, spatial data types and data management, basic programming, and the rudiments of GIS. Chapters 6-8 cover analysis in greater detail, and the author's mix of 'just enough' statistics, practical example, and real data is a welcome learning aid. Chapters 6 and 7 cover point and attribute analysis, whilst chapter 8 covers local analysis including geographically weighted modelling (my own preference would be to see more of this in future editions perhaps). Given the volume of publicly available geographic data, coupled with the analytical tools provided by Brunsdon and Comber, a committed student could quite quickly produce

some powerful output. What was most appealing about using the book as an upskilling resource, however, was its open-endedness. The capacity to expand on any of the procedures outlined in the book is extensive, and the authors provide a foundation sufficient to induct the novice, yet detailed enough to facilitate further exploration.

So, have I made 'the switch'? Not just yet – at least not completely, although my GIS needs are now adequately met by R thanks to this book. However, while statistical modelling forms a substantial part of my work, I simply have not spent enough consecutive blocs of time at the computer to internalise a complex language. Which is perhaps why I found Stata so appealing: for someone who works principally with the linear model (and some dynamic panel and cluster work); I can count on the help libraries to drop me back in after a period of absence, and the base commands are relatively simple. However the open-source nature of R means that developments in 'fundamental' statistics quickly find their way to the programme – this is the future of statistics and for geocomputation, it now seems the best way to keep pace with the field. The investment is substantial. I am not a programmer and my knowledge of statistics – although sound for my profession – is rudimentary compared to that of a working statistician, and, of course, time is often short. Taking stock of all this, it is remarkable that Brunsdon and Comber have produced something which speaks to these difficulties; the steep interface learning curve, and level of statistical detail. With the exception perhaps of Andy Field's iteration of *Discovering Statistics for R*, few have managed to provide so thorough yet accessible an introduction.

Review: William Mitchell, *Eurozone Dystopia: Groupthink and Denial on a Grand Scale*, 2015 (Edward Elgar).

Larry Brownstein

Bill Mitchell is one of the world's foremost macroeconomists and one of the original developers of the macroeconomic paradigm, Modern Monetary Theory. MMT is the foremost alternative to the neoclassical economic paradigm, the mainstream theory used by governments around the world. MMT is considered by its founders to be concerned only with accurate descriptions and explanations of real world economic activity, and is fundamentally evidence-based. Mitchell's analyses of the problems exhibited by the Eurozone are analyzed from this perspective. While many proponents of MMT associate themselves with the political left, the theory itself is viewed by its founders, one of them being Mitchell himself, as politically neutral.